2.4 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Table 2.e contains a summary matrix of the alternatives comparing their environmental consequences for the specific resource categories, with intended proposed mitigation actions factored into the assessment of impact. Chapter 3 contains a more detailed discussion of the environmental consequences of the proposed action and alternatives. The qualitative terms used in the matrix are generally defined as:

- None – No impact is expected to occur.
- Minor – Adverse impacts are expected to occur; impacts would be measurable and may have slight effects on resource.
- Moderate – Adverse impacts are expected to occur; impacts would be noticeable and would have a measurable effect on resource.
- Severe – Significant adverse impacts are expected to occur; impacts would be obvious and would have serious consequences to resource.
- Beneficial – Only beneficial impacts are expected to occur.

Table 2.e Summary of Environmental Consequences under Each Alternative.

Resource Categories	Alternatives	
	Alternative 1: No Action	**Alternative 2: Stationing of Airborne BCT**
Air Quality	Minor	Minor
Soil Resources	Moderate	Moderate
Water Resources	Minor	Minor
Vegetation	Minor	Minor
Wildlife and Fisheries	Minor	Minor
Socioeconomics Regional Economic Activity Housing, Public Services, Recreational Activities, etc	 Beneficial Minor	 Beneficial Minor
Noise	Minor	Minor to Moderate

3.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the affected environment (existing conditions) and the environmental consequences for the proposed action and alternatives. The table below describes thresholds to which environmental impacts are compared. Exceeding a threshold could represent a significant impact under NEPA.

Table 3.a Impact Thresholds[1] in Relation to Issue and Region of Influence.

Resource/Issue of Concern	Region of Influence	Thresholds for Possible Significant Impact[2]
Air Quality	Installation and Immediate Surrounding Area	If the proposed action would cause violation of National Ambient Air Quality Standards or require major modification of a Title V Operating Permit, negatively impact the ability of an area to meet CAA attainment standards, and/or cause violation of Nation Emission Standards for Hazardous Air Pollutants.

Resource/Issue of Concern	Region of Influence	Thresholds for Possible Significant Impact[2]
Soils	Installation Watersheds	Erosion resulting in soil loss or compaction that precludes establishment of native vegetation or sediment delivery, unpermitted construction during summer months, unpermitted mechanical digging or drilling; or training activities that exceed established maneuver impact miles (MIMs) thresholds (Table 3.c).
Water Resources	Watersheds	Introduction of a pollutant into a water body causing a failure to meet designated water quality standards.
Vegetation	Installation Landscape	Fragmentation, loss, or degradation of high quality natural areas or sensitive sites; local extirpation of rare or sensitive plant species; fragmentation of vegetation such that it no longer meets the habitat requirements of local fauna; or introducing or increasing the prevalence of undesirable non-native species.
Wildlife and Fisheries	Landscape Scale	Population-level impacts (e.g., potential to reduce local populations below self-sustaining levels or long-term loss or impairment of substantial portions of local habitat [species specific]), or work conducted in anadromous streams during critical anadromous fish life cycles (mid-May to mid-July).
Noise	Installation and Surrounding Area	Actions that would extend Zone II or Zone III noise contours into new populated areas or extended populated areas into existing Zone II or Zone III noise contour areas.
Socioeconomics	Regional Scale	Significant negative impacts on levels of employment or family income, disproportionate impacts to minorities or low-income individuals, or health and safety risks for children.

[1]Although some thresholds are designated based on legal or regulatory limits or requirements, others reflect discretionary judgment and best management practices on the part of the Army in order to accomplish its primary mission of military readiness while also fulfilling its conservation stewardship responsibilities. Quantitative or qualitative analyses may be used in determining whether, and the extent to which, a threshold is exceeded.
[2]Thresholds listed are for potential effects of the proposed action prior to or without mitigation.

3.1 AIR QUALITY

3.1.1 Affected Environment

The Clean Air Act (CAA) authorizes the Environmental Protection Agency (EPA) to establish national ambient air quality standards (NAAQS) to protect public health and the environment. Federal standards for the six criteria air pollutants have been adopted by the State of Alaska, which manages the CAA within the state. These include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, inhaleable particulate matter, and lead. Carbon monoxide (CO) and particulate matter (PM) are specific pollutants of concern for Alaskan communities. More information on existing air quality conditions for Fort Richardson, Fort Wainwright, and DTA can be found in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004).

Fort Richardson

While the city of Anchorage is subject to maintenance plan requirements for CO and the Eagle River area is in a nonattainment area for PM_{10}, Fort Richardson is not within either of these areas and is in attainment with the NAAQS for all the criteria air pollutants.

Fort Richardson is proceeding with a new permitting strategy involving the reclassification of the facility into a series of smaller facilities organized by Standard Industrial Classification (SIC) codes. On August 2, 1996, EPA issued guidance on major source determinations at federal military installations (EPA 1996). The reclassification would follow these guidelines. It could increase future flexibility in permitting and allow a certain amount of growth to occur over time without having to go through the construction permitting process. These individual SIC facilities would be classified as minor individual sources and would only require construction permitting once the individual SIC grouping exceeded the major source thresholds. The Alaska Department of Environmental Conservation (ADEC) has approved this new permitting strategy.

Fort Wainwright

The Fairbanks North Star Borough nonattainment area for CO was redesignated from nonattainment to attainment for CO by the EPA on 27 September 2004 (Fed. Reg. 27 July 2004 (69FR44601-44607). Areas classified as attainment but operating under a maintenance plan are referred to as maintenance areas. Areas of Fort Wainwright located within the North Star Borough maintenance area are subject to general conformity regulations to ensure that federal activities do not interfere with the pollutant limits set in state implementation plans. A portion of Fort Wainwright is located within this maintenance area.

Ice fog is an air pollution problem in interior Alaska caused by man-made sources of water vapor. It can occasionally occur for weeks at a time, whenever temperatures go below -35° F. Cooling waters from power plants are the largest single source. Automobiles are next in importance because of their wide-ranging mobility and exhaust pipes close to ground level. Also, many cars are left with engines idling for hours at a time during very cold weather (Benson 1970).

Donnelly Training Area

DTA is designated as an attainment area for the six regulated NAAQS and is permitted as a separate facility from Fort Wainwright. Since the annual potential emission is less than 100 tons for any of the criteria pollutants, no air quality operating permit is required at this time.

Fugitive dust is typically generated from daily industrial activities such as bulk material handling, storage, and construction projects. The Delta River and Jarvis Creek are large sources of fugitive dust during wind events in summer and sometimes during winter months. Driving heavy machinery, construction equipment, and personal and tactical vehicles on unpaved surfaces can also generate fugitive dust.

No air quality monitoring data exists for DTA or for any of the surrounding communities. Particulate sampling equipment was recently installed at Fort Greely, but insufficient data have been collected to provide an accurate measure of air quality relative to this pollutant. Air quality at DTA approximates natural baseline conditions, given the low density of human development and emission sources present. While DTA does experience periodic episodes of ice fog, they are generally short in duration. Strong and persistent temperature inversions do occur, but, due to the limited number of emission sources, the inversions are unlikely to cause pollutant levels that exceed the NAAQS.

3.1.2 Environmental Consequences

Alternative 1: No Action

Under the No Action Alternative, the 1-501st ATF would not convert to an Airborne BCT. No additional impacts to air quality would result from this alternative.

Alternative 2: Convert 1-501st Airborne Task Force to Airborne BCT (Proposed Action)

Stationing
The stationing of additional personnel would cause long-term minor air quality impacts as the result of an increase of personal vehicles on Fort Richardson, adding to mobile emissions in the area. All vehicles principally located or operated in the Municipality of Anchorage are required to pass a vehicle and maintenance emissions test every two years.

Construction
Construction of new facilities at Fort Richardson would result in short-term minor impacts from fugitive dust emissions and fuel combustion from construction equipment. Dust emissions are expected to be minor due to the methods proposed to mitigate fugitive dust generation.

Long-term impacts to air quality at Fort Richardson are expected from the operation of new gas-fired boilers used for heating new facilities and from activities associated with the new vehicle maintenance shop. These facilities would add to Fort Richardson's stationary source emissions. Fort Richardson will evaluate the need for minor construction permits and follow any necessary permitting requirements to ensure compliance with these regulatory provisions. Estimated emissions from each new facility on Fort Richardson are listed in Table 3.b. These emission increases are considered minor due to off-sets resulting from the removal of other stationary emission sources on Fort Richardson, with any aggregate increase at the *de minimis* level.

Table 3.b Projected Air Quality Emissions of Proposed Airborne BCT Facilities.

Building	Building Description	Unit Description	Input Capacity (MMBtu/Hr)
606	Headquarters - Task Force 1 - 501st Airborne	Boilers	0.606
618	Support Operations Center - Task Force 1 - 501st Airborne	Boilers	0.606
620	Task Force 1 - 501st Airborne - Barracks	Boilers	3.680
620	Task Force 1 - 501st Airborne - Barracks	Boilers	3.680
622	864th Engineer Battalion - Barracks	Boilers	3.680
622	864th Engineer Battalion - Barracks	Boilers	3.680
624	B Battery, 377th PFAR - Task Force 1 - 501st Airborne - Barracks	Boilers	3.680
624	B Battery, 377th PFAR - Task Force 1 - 501st Airborne - Barracks	Boilers	3.680
626	B Company - Task Force 1 - 501st Airborne - Barracks	Boilers	3.680
626	B Company - Task Force 1 - 501st Airborne - Barracks	Boilers	3.680
628	C Company - Task Force 1 - 501st Airborne - Barracks	Boilers	3.680
628	C Company - Task Force 1 - 501st Airborne - Barracks	Boilers	3.680
630	A Company - Task Force 1 - 501st Airborne - Barracks	Boilers	3.680
630	A Company - Task Force 1 - 501st Airborne - Barracks	Boilers	3.680
632	HHC - Task Force 1 - 501st Airborne - Barracks	Boilers	3.680
632	HHC - Task Force 1 - 501st Airborne - Barracks	Boilers	3.680
634	Dental Clinic	Boilers	1.586
658	Kiska Hall Education Center	Boilers	3.680
658	Kiska Hall Education Center	Boilers	3.680
662	164th Military Police Company - Barracks	Boilers	3.680
662	164th Military Police Company - Barracks	Boilers	3.680
664	A Company, 4th Battalion, 23rd Infantry - Barracks	Boilers	3.680
664	A Company, 4th Battalion, 23rd Infantry - Barracks	Boilers	3.680

667	84th Engineer Battalion - Barracks	Boilers	3.680
667	84th Engineer Battalion - Barracks	Boilers	3.680
668	Headquarters Company - Barracks	Boilers	3.680
668	Headquarters Company - Barracks	Boilers	3.680
670	C Company, 4th Battalion, 23rd Infantry - Barracks	Boilers	3.680
670	C Company, 4th Battalion, 23rd Infantry - Barracks	Boilers	3.680
672	Headquarters, Special Troops Battalion	Boilers	0.606
TOTAL MMBtu REMOVED TO ACCOMMODATE CONSTRUCTION PROJECT:			**99.084**
TONS PER YEAR CRITERIA POLLUTANTS REMOVED BY DEMOLITION OF EXISTING SOURCES:			**81.714**
NET PROJECT EMISSIONS (TONS PER YEAR OF CRITERIA POLLUTANTS):			**-47.793**

Regulated operations at the vehicle maintenance shop on Fort Richardson would likely include the recycling and proper disposal of automotive refrigerants and may include other regulated activities such as solvent use, automotive painting and removal, and the refueling of vehicles (EPA 2003). Fort Richardson will evaluate the required operations and follow EPA and ADEC guidelines to ensure compliance with any regulated operations.

Equipment and Training
Training activities at Fort Richardson, Fort Wainwright, and DTA would contribute to short-term emission increases on training areas. Emissions include dust from unpaved roads and vehicle exhaust and are not likely to increase significantly from those described in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004). Military tactical vehicles are exempt from state emissions testing requirements. Increased air impacts due to in-state deployments are expected to be slight.

Cumulative Impacts
All current and planned construction projects for Fort Richardson's cantonment area would have local air quality impacts cumulative to those under the proposed action. These impacts consist of dust generated from ground and vegetation disturbance and use of motorized construction equipment. Emissions generated by construction equipment would be temporary and insignificant. Dust is controlled through use of best management practices. Heating for the new facilities would create a long-term cumulative increase in emissions. Additional new facilities on Fort Richardson include family housing and strategic mobility infrastructure. The cumulative impacts are expected to be minor due to the removal of other emission sources such as the heating and power plant and housing units.

The proposed action will contribute to minor cumulative impacts from training activities at Fort Richardson, Fort Wainwright, and DTA. A majority of the impact would result from Stryker BCT training at Fort Wainwright and DTA. These air quality impacts are described in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004). The additional air emission resulting from the proposed action represents a minor increase of existing emission levels and would not be substantially different from that considered in the 2004 *Transformation of U.S. Army Alaska Final EIS*.

3.2 SOIL RESOURCES

3.2.1 AFFECTED ENVIRONMENT
Soil is a dynamic medium made of mineral and biological matter, organic material, water, and air. Soils are produced by the continual interaction of five soil-forming factors: climate, vegetation, organisms, parent material, and topography. Climate is the most important soil-forming factor for Alaska. Differences in soil composition and formation result in soils of differing properties, which are also continually altered by natural processes. Soil properties ultimately determine the natural and human

activities that can take place in a given area.

Permafrost is defined as soil, silt, and rock that remain frozen year-round. Though a thin layer may thaw during summer months, the majority of permafrost remains frozen until the local climate changes or it melts due to disturbance of the insulating peat and vegetation above it. Permafrost is a major factor influencing the distribution of vegetation and human activities in Alaska. It typically exists in multiple layers of varying thickness ranging from less than one foot to more than 150 feet. Permafrost has important influences on soil processes including cryoturbation (the mixing of soil due to freezing and thawing which results in contorted and broken horizons), rapid water runoff, ground subsidence and restriction of drainage. Thermokarst is the process and range of features resulting from irregular subsidence of permafrost. These features include hummocks and mounds, water-filled depressions, flooded forests, and mudflows on sloping ground.

Fort Richardson

Soil maps utilizing the Unified Soil Classification System describe a wide variety of engineering soil types on Fort Richardson. Glacial moraines, outwash, tidal flats, and peat bogs all provide a wide variety of parent material for soils at the installation (USARAK 2004). The soils are shallow, immature, and deficient in primary plant nutrients and water retention ability, making them a primary limiting factor for vegetative growth during dry periods. In depressions and saturated areas, such as wetlands, surface horizons may be covered with peat (USARAK 2002b). A soil survey of the Anchorage area conducted by the Natural Resources Conservation Service identified two distinct climatic zones along with their associated soil types (Moore 2002) – the lowlands surrounding Anchorage (including Fort Richardson) and the adjacent Chugach Mountains.

Permafrost is found in less than 1% of Fort Richardson. It occurs primarily in patches of forested bogs near Muldoon Road, with some permafrost persisting at high elevations. Although thermokarst has occurred in the forested bog areas, the effects of thermokarst have been negligible (<0.1% of the area over 200 to 300 years) (Jorgenson et al. 2002).

Fort Wainwright

The soils of Fort Wainwright are weakly developed as a result of the cold climate and youth of parent materials. Nearly all soils on Fort Wainwright have some organic layer, except where floods occurred or humans frequently disturbed the surface. Organic matter accumulation, oxidation and reduction of iron, and cryoturbation are the major soil-forming processes in the Fort Wainwright area (Swanson and Mungoven 2001). Engineering soil types found at Fort Wainwright consist dominantly of silt on the hills with wetter and more organic silty soils in the lower drainages (USARAK 2004).

Most of the soils on Main Post are Chena alluvium, formed in unconsolidated silt-gravel mixture. Soils at TFTA are formed in various unconsolidated materials and are dominated by highly organic, wet, and cold soils (Rieger et al. 1979). The south slopes of the mountainous YTA consist of well-drained silt loams, while north-facing slopes are shallow, gravelly, silt loams. Drainage bottoms and depressions consist of shallow gravelly, silt loam covered with a thick layer of peat (BLM and U.S. Army 1994).

On Main Post, permafrost occurs at variable depths with discontinuous permafrost lying just beneath the surface in some areas. Most of TFTA is underlain by continuous or discontinuous permafrost. Permafrost lies within 20 inches of the surface and is nearly 128 feet thick in some places (USARAK 2002c). Tanana Flats is experiencing rapid and widespread thermokarst as a result of degrading permafrost. Eventually this will dramatically alter the structure and function of ecosystems in permafrost-dominated areas. YTA is in the discontinuous permafrost zone of Alaska where perennially frozen ground is widespread. The

thick layers of peat typical of both north slopes and drainage bottoms/depressions are underlain by permafrost, while south slopes are generally free of permafrost (BLM and U.S. Army 1994).

Fort Wainwright's Integrated Natural Resources Management Plan (USARAK 2002c) indicated military activity has its greatest impacts on soil productivity in the Main Post area due to construction. Soils in other areas have been impacted by military activities, localized around small arms ranges, roads, and other facilities. The Stuart Creek Impact Area, located in the YTA, may have had more severe erosion due to explosions and burning, but overall, soils on Fort Wainwright have been relatively unaffected by military training (USARAK 2002c).

Donnelly Training Area

Soils in Donnelly Training Area are primarily derived from glacial activities, modified by streams and discontinuous permafrost, and in many places overlain by loess. Few soils in Donnelly Training Area have been mapped in detail, with the exception of areas near the Main Post cantonment area. The Natural Resources Conservation Service has identified 12 soil associations in the area (Rieger et al. 1979). Soils in the northern, west-central, and eastern portions of Donnelly Training Area West were identified as silt-loam associations, while Donnelly Training Area East was described as a shallow silt-loam over gravelly sand. Engineering soil types found at Donnelly Training Area are highly variable due to the diverse geomorphic landscape and sediments comprising it (USARAK 2004).

Soils at Gerstle River Training Area are described as poorly drained with mottled gray, gravelly silt or sandy loam beneath the thick surface mat of peat. Soils on the western portion of Black Rapids Training Area were developed in glacial till and most are poorly drained. Bedrock outcrops on peaks and ridges and loose rubble occur in many high areas. Well-drained soils have developed in very gravelly material at the foot of high ridges and on some south-facing slopes and hilly moraines at lower elevations. The eastern portion of the training area is classified only as rough mountainous land in a 1979 exploratory survey (Rieger et al. 1979).

Permafrost is highly patchy and irregular on Donnelly Training Area, particularly in morainal areas where abrupt changes in slope and aspect occur (Jorgenson et al. 2001). The highly variable sediment types, complicated topography, and micro-climatic variability make prediction of permafrost difficult. Isolated patches of permafrost are found in areas under sandy gravel from 2 to 40 feet below ground level, with thickness varying from 10 to 118 feet. A relatively large portion of the landscape has discontinuous permafrost, but existing and abandoned river channels, lakes, wetlands, and other low-lying areas are likely permafrost-free (Williams 1970). Gerstle River Training Area has a shallow permafrost table (below 10 to 20 inches) that occupies a broad outwash plain (Rieger et al. 1979). Permafrost conditions at Black Rapids Training Area are assumed to be similar to those of Donnelly Training Area.

Only a small portion of Donnelly Training Area is presently affected by permafrost degradation, which is indicated by the presence of thaw ponds. Permafrost degradation appears to be less compared to Fort Wainwright due to the cooler climate and higher elevations and the prevalence of thaw-stable, gravelly soils at Donnelly Training Area. However, areas dominated by loess or other silty sediments may be more vulnerable to permafrost degradation. Continued climatic warming or disturbance of the ground surface may increase the amount of thermokarst at Donnelly Training Area.

More background information on soils can be found in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004).

3.2.2 Environmental Consequences

Alternative 1: No Action

Under Alternative 1, the 1-501st Airborne Task Force would not be converted to an Airborne BCT. No increased soil impacts would result from this alternative.

Impacts and mitigation from maneuver training as a result of USARAK force transformation were addressed in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004). Current impact levels (measured in MIMs), training space requirements (measured in km^2 days), and MIMs capacity are presented in Table 3.c. MIMs are a collective measure of impacts resulting from mission activities on a given parcel of land. One MIM has the equivalent impact on soil erosion as an M1A2 tank driving one mile in an armor battalion field training exercise. At USARAK, MIMs calculations include use of Stryker, HMMWV, MTV, SUSV, HMEE, DUECE, and other tactical wheeled vehicles (USARAK 2004). Increased MIMs capacity during winter reflects the fact that when the ground is frozen, training is less likely to impact soils.

Table 3.c Annual Maneuver Training Space and MIMs Requirements under the No Action Alternative.

Unit	Km^2 Days	MIMs	MIMs Capacity	
			Summer	Winter
Fort Richardson				
Airborne Task Force	34,912	8,200	109,075	203,455
Other USARAK	12,264	400		
Total	47,176	8,600		
Fort Wainwright				
Airborne Task Force	0	0	201,692	4,905,872
Other USARAK	29,696	67,200		
Total	29,696	67,200		
Donnelly Training Area				
Airborne Task Force	7,704	0	62,517	3,552,315
Other USARAK	57,422	86,100		
Total	65,126	86,100		

Alternative 2: Convert 1-501st Airborne Task Force to Airborne BCT (Proposed Action)

Construction

Under the proposed action, temporary minor impacts to soils would result during construction of the new facilities listed in Table 2.b of Section 2.2, Description of the Alternatives. Construction of these facilities would take place in the urbanized cantonment area and would be expected to temporarily impact approximately 60 acres.

Best management practices to control erosion, such as silt fences and others described by USARAK's Integrated Training Area Management Program Five Year Management Plan (USARAK 2005), would be used to ensure soils do not erode from construction sites or enter waterways. Exposed soils would be stabilized and storm water managed in a manner conforming to the existing storm water pollution prevention plans. Established USAGAK and Alaska Department of Environmental Conservation procedures would be followed if contaminated soils or materials are discovered during construction.

Other USARAK construction practices include limiting soil impacts to the smallest footprint possible, particularly in newly developed areas, and avoiding removal of surface soils during vegetation clearing operations in order to improve natural revegetation. Overall, construction of infrastructure under the proposed action would be expected to have minor, short term, and localized impacts. Total impacts would not be substantially different than those evaluated in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004).

Equipment and Training
Converting the 1-501st Airborne Task Force to an Airborne BCT would include an increase in training activities at Fort Richardson, Fort Wainwright, and Donnelly Training Area. Training for the Airborne BCT would mostly involve foot and air traffic. Although training exercises at the company level and above are expected to occur at Fort Wainwright and Donnelly Training Area, detailed information regarding the proportion of training that will occur at each of the three installations is not available. For this analysis, the worst case scenario of all training occurring at each installation is considered.

If all Airborne BCT training occurred at Fort Richardson, total MIMs would increase to 30,000 when combined with training by other USARAK units (Table 3.d). This would be an increase of approximately 350%. While a substantial increase, it would still be well below the estimated training load capacity for Fort Richardson since a significant portion of USARAK training occurs during winter months. Based on historic practices, the operating assumption is that half of training would occur during winter. Fort Richardson's carrying capacity for training has been calculated as 109,075 MIMs during summer and 203,455 during winter (USARAK 2004). Total training space requirements would increase at Fort Richardson by approximately 250% to 117,000 km^2 days under the proposed action (Table 3.d).

Most of the impacts from Airborne BCT training would be foot traffic and would be concentrated on drop zones and ranges (Figures 3, 4 and 5). Soil impacts from vehicle use would mainly be limited to roads, trails, and drop zones. Army regulations direct vehicles to remain on marked trails and designated routes during tactical deployment and established roads during administrative time. By concentrating impacts on designated trails, soils off trail are protected from damage. Due to the light nature of airborne unit training, moderate impacts to soils would be expected from foot traffic and the use of tactical vehicles if all training occurred at Fort Richardson. Stryker vehicles would not be used by the Airborne BCT (see Table 2.d).

Alternatively, if all training occurred at Fort Wainwright, total MIMs would increase to approximately 92,000 at that installation, an increase of approximately 135% (Table 3.d). This increase is well below the estimated training load capacity for Fort Wainwright. The installation's carrying capacity for training has been calculated as 201,692 MIMs during summer and 4,905,872 during winter (USARAK 2004).

Training space requirements would increase at Fort Wainwright by approximately 450% to approximately 134,500 km^2 days under the proposed action (Table 3.d). Since training would occur over a larger area and impacts to soil would be more dispersed, impacts would be expected to be less than those on Fort Richardson. Most of the impacts from training would be foot traffic and would be concentrated on drop zones and ranges (Figure 2). Soil impacts from vehicle use would mainly be limited to roads, trails, and drop zones. Overall impacts to soil would be expected to be minor if all training occurred at Fort Wainwright.

If all training occurred at Donnelly Training Area, total MIMs would increase to approximately 111,000 at the installation, an increase of approximately 130% (Table 3.d). This increase is well below the estimated training load capacity for Donnelly Training Area. The installation's carrying capacity for training has been calculated as 201,692 MIMs during summer and 4,905,872 during winter (USARAK 2004).

Training space requirements would increase at Donnelly Training Area by 250% to approximately 162,000 km^2 days under the proposed action (Table 3.d). Since training would occur over a larger area and impacts to soil would be more dispersed, impacts would be expected to be less than those on Fort Richardson. Most of the impacts from training would be foot traffic and would be concentrated on drop zones and ranges (Figure 2). Soil impacts from vehicle use would mainly be limited to roads, trails, and drop zones. Overall impacts to soil would be expected to be minor, similar to those that would occur if all Airborne BCT training occurred on Fort Wainwright.

Monitoring and rehabilitation efforts of the Range and Training Land Analysis and Land Rehabilitation and Maintenance components of the ITAM program would be utilized to determine effects of training on soils and adjust training use. During spring break-up, training is limited when necessary to protect soils. Fugitive dust, as a result of ground disturbance from normal usage during summer months, would be minimized by utilizing best management practices (such as chemical soil stabilizers or water, when necessary) as described in the ITAM Five-Year Management Plan (USARAK 2005.)

Soil impacts discussed above present a worst case scenario at Fort Richardson, Fort Wainwright and Donnelly Training Area. Since training would be distributed between the three installations, impacts would be expected to be less than presented above. When current, ongoing mitigation measures of the ITAM program are considered, impacts would be further reduced. Overall, minor impacts to soils would be expected at each installation as a result of Airborne BCT training. Anticipated impacts from increased training activities under the proposed action are not substantially different from those considered in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004).

Table 3.d Annual Maneuver Training Space and MIMs Requirements under the Proposed Action.

Unit	Km^2Days	MIMs	MIMs Capacity	
			Summer	Winter
Fort Richardson				
Airborne BCT	104,736	24,600	109,075	203,455
Other USARAK	12,264	400		
Total	117,000	30,000		
Fort Wainwright				
Airborne BCT	104,736	24,600	201,692	4,905,872
Other USARAK	29,696	67,200		
Total	134,432	91,800		
Donnelly Training Area				
Airborne BCT	104,736	24,600	62,517	3,552,315
Other USARAK	57,422	86,100		
Total	162,158	110,700		

Cumulative Impacts

Current and future cantonment projects, range improvement projects, training activities, and nonmilitary activities with the possibility of contributing to cumulative actions on Fort Richardson are described in Section 2.3. All current and planned construction projects for Fort Richardson's cantonment area have cumulative impacts to soils. Impacts are primarily related to soil erosion and sediment control and would be limited to the construction and adjacent areas during the construction period. Planned construction on Fort Richardson cantonment includes strategic mobility infrastructure and family housing. About 920 acres of planned construction outside the cantonment area has the potential to impact soils. These range improvement projects include the Arctic Warrior maneuver corridor, road widening and vegetation management activities outlined in the *Integrated Training Area Management Program Management*

Plan (USARAK 2005). The plan also outlines best management practices and procedures used to mitigate impacts to soils from construction activities. Cumulative impacts to soils due to construction activities are expected to be minor to moderate, but temporary.

The proposed action would contribute minor cumulative impacts to soils from training activities at Fort Richardson, Donnelly Training Area, and Fort Wainwright, and would not be substantially greater than the impacts evaluated in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004). Airborne BCT training would not require extensive cross-country maneuvers off roads. They would remain on roads, training ranges, drop zones, and airfields and thus would not be a big contributor to cumulative soil impacts. The majority of impacts would come from Stryker BCT training at Fort Wainwright and Donnelly Training Area and were projected to be moderate by the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004).

3.3 WATER RESOURCES

3.3.1 Affected Environment

Waterways in Alaska are designated for one or more of the following uses:

Class A: Water supply
- (i) drinking, culinary, and food processing
- (ii) agriculture, including irrigation and stock watering
- (iii) aquaculture
- (iv)industrial

Class B: Water recreation
- (i) contact recreation
- (ii) secondary recreation

Class C: Growth and propagation of fish, shellfish, other aquatic life and wildlife

Water quality criteria were developed by the State of Alaska for each designated use (18 AAC 70). If a water body is designated as having more than one use class, the more stringent water quality criterion applies.

Fort Richardson

Fort Richardson has 12 named lakes and ponds and several unnamed water bodies. The combined area for the named lakes and ponds is 359 acres. Five relatively large lakes, Clunie, Otter, Gwen, Thompson, and Waldon, are managed for recreational fishing. The waters on Fort Richardson are protected by freshwater use classes A, B, and C, as assigned by the State of Alaska.

Ship Creek (from the Glenn Highway bridge to the mouth) is listed on the state's 303 (d) list of impaired waters due to excess fecal coliform bacteria, petroleum hydrocarbon, oil, and grease. A total maximum daily load for fecal coliform has been determined. According to ADEC studies, most of the pollutants entered Ship Creek as non-point sources from surface water runoff and groundwater downstream of the post, where the watershed is increasingly urbanized. After compiling and reviewing the data, the state concluded that no cumulative or increasing water quality degradation was occurring in the lower portion of Ship Creek (ADEC 1996). Water from Ship Creek is diverted for Fort Richardson, Elmendorf Air Force Base, and the Anchorage Municipality. Ship Creek leaves Fort Richardson at the border with Elmendorf Air Force Base.

Eagle River is a glacial waterway that ends at Eagle River Flats, a 2,200-acre estuarine tidal marsh. Eagle River Flats was removed from the state's list of impaired waters after extensive remediation efforts for white phosphorous were shown to be successful (ADEC 2002).

Industrial activities have had some effects on groundwater. Through monitoring, pollution was found to be associated with underground storage tanks, chemical storage facilities, and chemical dump sites. Fort Richardson was identified as a CERCLA (Superfund) site. These areas are monitored intensively and no indication of deep groundwater pollution has been detected. Pollution has been minor and localized and no significant risks to human health were found. Water quality has improved recently due to Army restoration projects to mitigate previous damage to the groundwater quality (USARAK 2004).

Fort Wainwright

Overall surface water quality on Fort Wainwright is good. The Chena River has been designated for Class A, B, and C uses. Iron concentrations, which stem from natural sources, exceed state secondary water standards. The Chena River portion that runs through Fairbanks and Fort Wainwright is listed on the state's 303 (d) list for impaired waters. The pollutants of concern are petroleum, hydrocarbons, and sediment. The pollutant source is listed as urban runoff. A total maximum daily load for petroleum and hydrocarbons is expected to be assigned this year (2005).

Due to its remote location, surface water quality data are not collected for much of TFTA. Data for the Wood and Tanana rivers upstream and downstream of the training area are used to estimate water quality. However, since these streams are surface water and spring-fed (not glacier-fed), it is expected that water quality would differ greatly between these rivers and the streams originating within the training area.

Due to lack of human development and activity on the training area, surface waters on YTA are relatively pristine. Water bodies originating within YTA flow into the Chena River. The waters meet all primary drinking water standards, and iron is the only parameter to exceed the Alaska state secondary drinking water standards. All of YTA's surface waters have low rates of primary and secondary productivity and high water quality.

Groundwater in the Fort Wainwright area contains high levels of metals, especially iron. Elevated arsenic levels are prevalent in the upland areas. These are naturally occurring levels and are not related to human-caused pollution (U.S. Army Corps of Engineers 1994).

Certain specific industrial activity on Main Post has caused shallow groundwater pollution associated with underground storage tanks, chemical storage facilities, and chemical dump sites. Army restoration projects have mitigated damage to groundwater quality, and practices that led to contamination have been discontinued. These areas were identified and are monitored intensively. Pollution at the sites is localized, and monitoring indicates no deep groundwater pollution.

Donnelly Training Area

DTA's surface waters are diverse and lie entirely within the Tanana River drainage basin. A majority of the larger streams flowing through the area, such as the Delta River and Jarvis Creek, are glacial.

The volume of surface water flow fluctuates dramatically by season. From October to May, flow is limited to groundwater seepage from aquifers into streams, and many small streams freeze solid (zero discharge). Any additional stream flow is converted to winter ice overflow, or "aufeis." Aufeis is an ice sheet that forms on a floodplain in winter when channels freeze solid or are otherwise dammed. The additional water spreads out over the frozen surface and freezes. Aufeis can accumulate several meters in thickness and cover large areas of the floodplain in streams such as the Delta River and Jarvis Creek. Snowmelt typically begins in May and reaches its peak in June, coinciding with the peak melting of

glaciers. Flows are greatest during June and July. After July, most of the snow has melted, and rainfall sustains a steady flow during August and September.

The State of Alaska has designated the streams on DTA for all use classes (Nancy Sonafrank, personnal communication 2005). Surface water quality values on DTA meet the state's primary drinking water standards. However, aluminum, iron, and manganese concentrations were higher than the state's secondary standards (USARAK 2004). High iron concentrations are typical in streams that drain wetland areas high in organic matter (Anderson 1970).

3.3.2 Environmental Consequences

Alternative 1: No Action

Under the No Action Alternative, the 1-501st ATF would not convert to an Airborne BCT. This alternative would not result in increased impacts to water resources.

Alternative 2: Convert 1-501st Airborne Task Force to Airborne BCT (Proposed Action)

Overall, impacts to surface water and groundwater resources at Fort Richardson would be minor and not significantly different that those considered in the 2004 *Transformation of U.S. Army Alaska Final EIS*.

Stationing

Stationing at Fort Richardson is not expected to increase impacts to water resources. Water demand in the Anchorage area would increase with Airborne BCT stationing. The personnel increase would represent about 2% of the total population in the area. Due to the abundance of available water, the rate of recharge, and the relative increase in population, the increase in water use on Fort Richardson is expected to have a negligible effect on water availability in the area.

Construction

Construction of new facilities at Fort Richardson has the potential to impact water resources. Transient construction impacts are expected at Fort Richardson, including increased overland flow and runoff and increased sedimentation due to direct runoff and fugitive dust. This impact is considered minor if standard best management practices to control sedimentation take place. These practices are described in the *Integrated Training Area Management Program Management Plan* (USARAK 2005) and stormwater pollution prevention plans.

Equipment and Training

Increased training vehicle use on Fort Richardson, Fort Wainwright, and DTA is expected to impact surface water due to soil compaction and erosion. However, impacts would be minor given the light footprint of airborne training. Training would consist of airdrops and maneuver training near drop zones. MIMs would increase from 8,200 to 24,600, or 200%, with the expansion of the 1-501st ATF to an Airborne BCT.

Munitions use would be expected to increase approximately 200% when compared to the 1-501st ATF. Eagle River Flats Impact Area is currently utilized for artillery and mortar firing, which has led to localized sediment load increase. Munitions training also deposits munitions constituents into surface waters. Under this alternative, training at Eagle River Flats would be expected to increase with Airborne BCT training. However, studies of munitions constituents on the impact area have shown that these constituents decompose rapidly and therefore concentrations degrade quickly over time and distance from impact (Ferrick et al. 2001; Houston 2002). Impacts are expected to be minor.

Refueling operations and petrochemical releases to the environment can be expected with increased vehicle use. Petrochemical spills can lead to decreased surface water and groundwater quality, as these chemicals can migrate to local waterways. However, existing institutional controls would reduce both the risk of inadvertent release and the environmental impact from a release. Impacts are expected to be minor.

Cumulative Impacts

The greatest cumulative impacts would result from construction and training activities other than those described under the proposed action. Additional construction activities at Fort Richardson that have the potential to impact water quality are family housing and strategic mobility projects. Water quality impacts from construction are mitigated through use of best management practices and following procedures outlined in the *Integrated Training Area Management Program Management Plan* and stormwater pollution prevention plans.

Training would contribute to minor cumulative impacts for water quality on DTA and Fort Wainwright. Impacts would be cumulative to the Stryker BCT training but would not result in impacts substantially greater than those analyzed in the 2004 *Transformation of U.S. Army Alaska Final EIS.* Airborne BCT training would not require extensive cross-country maneuvers off roads. They would remain on roads, training ranges, drop zones, and airfields. These practices would serve to limit the cumulative impacts to water quality.

3.4 VEGETATION

3.4.1 Affected Environment

Most lands used by the U.S. Army in Alaska were relatively undisturbed when they were withdrawn for military use in the early 1940s. Military activities may have resulted in localized changes in ecosystems and affected abundance of certain species for short periods, but probably have not affected the overall diversity of species. The greatest losses of habitat are associated with construction and urbanization of the cantonment areas.

USARAK lands are within the polar domain of Bailey's (1995) ecoregion classification system, which is characterized by low temperatures, severe winters, and relatively low precipitation. These lands are also classified within the subarctic division, which is influenced by cold snowy climate. Dominant forests in the subarctic division are boreal subarctic forests, open lichen woodlands, and taiga.

Maintenance of tree density, ground cover, and forest ecosystem function are critical to the accomplishment of the Army's mission. In addition, sustainable management of forest ensures maintenance of biological diversity, wildlife habitat, and continued development of outdoor recreation. Details for management of vegetation are found in the Integrated Natural Resources Management Plans for each post (USARAK 2002a,b,c).

The Aleutian shield fern (*Polystichum aleuticum)* is the only plant species currently listed as federally threatened or endangered in Alaska (USFWS 2004.) This species is not found on Fort Richardson, Fort Wainwright, or DTA (USARAK 2002a,b,c).

Additional vegetation information can be found in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004).

Fort Richardson

Many different vegetation communities are present on Fort Richardson, from coastal salt marsh and boreal forest types to high alpine tundra, talus slopes, shrub lands, snow beds, heaths, and meadows. An

ecological survey of Fort Richardson conducted by Jorgensen et al. (2002) indicates the installation is covered by forest (55.3%), scrub lands (23.7%), barren lands (5.5%), human disturbed lands (13.1%), bog and wetland (1.6%), meadow (0.7%) and water (0.5%). Forest types include white spruce, paper birch, and quaking aspen in upland sites; cottonwood and poplar along principle streams with black spruce in wetter areas; and white spruce, mountain hemlock, and balsam poplar along tree lines. A floristic inventory of Fort Richardson also conducted by Lichvar et al. (1997) included vascular plants, ferns and fern allies, the more common mosses, liverworts, and lichens. The inventory documented 561 vascular species (representing approximately 30% of Alaska's vascular flora types) and 239 non-vascular species. A complete inventory of flora found on Fort Richardson can be found in Fort Richardson's Integrated Natural Resource Management Plan (USARAK 2002b).

The Alaska Natural Heritage Program (2005) tracks rare vascular plant species in Alaska, approximately 21 of which are known to occur on Fort Richardson (USARAK 2002b). Some alpine and wetland areas contain plant species that are considered rare in Alaska or globally imperiled (Lichvar and Sprecher 1998b). USARAK also lists three types of vascular plants found on Fort Richardson as species of concern: *Viola selkirkii* is rare in Alaska, *Taraxacum carneocoloratum* is taxonomically questionable but is rare globally and in Alaska, and *Saxifraga adscendens oregonensis* whose status is secure globally but is considered to be rare and imperiled in Alaska. These plants are not listed as endangered or threatened species.

Fort Wainwright

An ecological survey (Jorgenson et al. 1999) of Fort Wainwright (including Main Post, TFTA and YTA) identified 49 vegetation types and indicated the installation consisted primarily of forest (53.4%), scrub lands (17.5%), tundra (<0.1%), barren lands (0.4%), meadows, bogs, and fens (22.6%), miscellaneous plant community complexes (5.4%), and water (0.8%). TFTA alone consisted of 41.5% forest and YTA, 83.3%. Alder and willow scrub communities are common at Main Post, TFTA, and YTA. Alpine tundra occurs above 2,500 feet in YTA, with barren lands occurring at higher altitudes. Vegetation communities found at Fort Wainwright are also described in Racine et al. (1997). Due to the variable climate, as well as physiographic and geographic patterns throughout the region, a wide variety of forest types exist, including white spruce, paper birch, balsam poplar, black spruce, spruce/hardwood, and quaking aspen.

A floristic inventory of Fort Wainwright Main Post, TFTA, and YTA identified 217 non-vascular species and 561 vascular species (plants, ferns and fern allies, common mosses, liverworts, and lichens) (Racine et al. 1997). The vascular species represent about 26% of Alaskan vascular plants, as identified by Hultén (1968).

At least 16 species of concern, as identified by the Alaska Natural Heritage Program (2005), are known to occur on Fort Wainwright (USARAK 2002c). USARAK has listed four plants of concern that are prioritized for Army posts in interior Alaska: *Apocynum androsaemifolium* is rare in Alaska, *Dodecatheon pulchellum pauciflorum* is taxonomically questionable but is imperiled in Alaska, *Festuca lenensis* is rare in Alaska and globally imperiled, and *Minuartia yukonensis* which is secure globally but is uncommon in Alaska.

Donnelly Training Area

An ecological survey (Jorgensen et al. 2001) reported vegetation cover as forest (29.0%), scrub lands (58.1%), tundra (4.4%), barren lands/partially vegetated (3.6%), human disturbed (0.6%), and water (4.3%). Forests cover at DTA is diverse and includes pure stands of spruce, hardwoods, and spruce/hardwood mixtures. The dominant types include white spruce, paper birch, quaking aspen, balsam poplar, black spruce, and spruce/hardwood. Scrub communities (typically composed of alder, willow, and dwarf birch) occur at high mountain elevations, in small stream-valley bottoms, and as pioneer vegetation

on disturbed sites. Dense thickets of scrub communities exist along floodplains or disturbed sites such as gravel pits, road shoulders, rights-of-way, and military trails (USARAK 1980). Most barren areas on DTA are located on gravel bars along the Delta River, the Little Delta River Delta Creek, Jarvis Creek, and Granite Creek (Jorgensen et al. 2001). Barren lands also occur above tree line, along ridges, and adjacent to rivers and streams. Higher elevation sites along the southern portion of DTA support moist tundra, which grades into alpine tundra and then into barren land.

A floristic inventory of DTA (Racine et al. 2001) did not include all possible taxa on post but identified 497 vascular species, representing about 26% of Alaskan vascular plants, as identified by Hultén (1968). At least 18 species of rare vascular plants on DTA are being monitored by the Alaska Natural Heritage Program (2005). Two plant species of concern, *Carex sychnocephala and Dodecatheon pulchellum pauciflorum*, are ranked in USARAK's short list of species of concern for ecosystem management.

3.4.2 Environmental Consequences

Alternative 1: No Action

Under the No Action Alternative, the 1-501st ATF would not convert to an Airborne BCT. This alternative would not result in increased impacts to vegetation.

Alternative 2: Convert 1-501st Airborne Task Force to Airborne BCT (Proposed Action)

Overall, impacts to vegetation under this alternative would be minor and not significantly different than those considered in the 2004 *Transformation of U.S. Army Alaska Final EIS*.

Construction

Construction of new airborne facilities would create a total footprint of approximately 60 acres on Fort Richardson's cantonment. Not all facilities would require vegetation removal before construction. Vegetation removal, therefore, may be less than 60 acres. Predominant vegetation in the cantonment area at Fort Richardson consists of primary successional species such as aspen, willow, alder, wild strawberries, and fireweed, along with invasive species such as dandelions, pineapple weed, and plantago.

Equipment and Training

Increased training would impact vegetation at Fort Richardson, Fort Wainwright, and DTA. This impact is considered to be minor due to the relatively light footprint of airborne training. Damage to vegetation from military activity occurs from off-road maneuvers and weapons training. Off-road impacts are less harmful during winter when snow pack protects vegetation. MIM requirements would increase from about 8,200/year to 24,600/year (200%). Maneuver space requirements would increase from about 34,912 km^2 to 104,736 km^2 (200%). Due to existing environmental regulations, adverse effects to vegetation would be minimized. For instance, Soldiers are directed to drive vehicles on established roads or trails. Vegetation would be monitored and any damaged areas would be rehabilitated under the Integrated Training Area Management program. Minor effects to vegetation from maneuver training would occur but impacts would be localized.

Cumulative Impacts

Construction under the proposed action would contribute to a cumulative loss of vegetation on Fort Richardson's cantonment area. Planned construction on Fort Richardson cantonment includes strategic mobility infrastructure and family housing. These projects and construction under the proposed action would be located within the 5,760 acre developed cantonment area of Fort Richardson. The cantonment area comprised 9.4% of the total installation area.

About 920 acres of planned construction outside the cantonment area have the potential to impact vegetation. These range improvement projects include the Arctic Warrior maneuver corridor, road

widening and vegetation management activities outlined in the *Integrated Training Area Management Program Management Plan* (USARAK 2005). The plan also outlines best management practices and procedures used to mitigate impacts to soils from construction activities.

Training would contribute to minor cumulative impacts at Fort Richardson, Fort Wainwright, and DTA. Airborne BCT training would not require extensive cross-country maneuvers in roadless areas. They would remain on roads, training ranges, drop zones, and airfields. This would limit impacts cumulative to other USARAK units like the Stryker BCT. The total cumulative impacts to vegetation from all units could be considered moderate.

3.5 WILDLIFE AND FISHERIES

3.5.1 Affected Environment

Wildlife management on USARAK lands has traditionally supported recreational and subsistence use, maintenance of populations and habitats, and preservation of biological diversity. Wildlife and fish populations and their habitats are managed cooperatively by USARAK, the Alaska Department of Fish and Game, and the U.S. Fish and Wildlife Service.

No federal or state listed threatened or endangered species have been found on USARAK lands (USARAK 2002a,b,c). The State of Alaska maintains a list of sensitive species, endangered species, and species of special concern for wildlife. These state listed species are not afforded legislative protection (ADFG 1998). A list of state species of concern and additional information on wildlife and fisheries can be found in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004).

Fort Richardson

Large mammals on Fort Richardson include black bear, grizzly bear, moose, and Dall sheep. Small game and furbearers found on Fort Richardson include coyote, lynx, red squirrel, snowshoe hare, hoary marmot, pine marten, beaver, river otter, wolverine, red fox, porcupine, mink, beaver, muskrat, and ermine or short-tailed weasel.

Two wolf packs inhabit the east side of the Glenn Highway and another pack probably occupies the west side, near Eagle River Flats (Kellie Peirce, personal communication 2002). The Ship Creek pack occupies the eastern portion of Fort Richardson and the Eagle River Flats pack occupies the western portion.

In recent years, beluga whales have been sighted within Eagle River Flats, as far as 1¼ miles up the Eagle River and in Cook Inlet adjacent to Elmendorf Air Force Base. Beluga whales have also been observed pursuing salmon along rivers (Quirk 1994). Harbor seals and orca whales are also sighted occasionally.

Avian surveys have identified 75 species of birds in the tidal salt marsh, including 24 species of waterfowl (USARAK 2004). Additionally, approximately 40 species of passerines and neotropical migratory birds and 6 species of raptors are found at Fort Richardson (Gossweiler 1984; CH2M Hill 1994; Andres et al. 2001; USARAK 2002e; Schempf 1995).

Three species on the list of Priority Species for Conservation are confirmed to be on Fort Richardson (Boreal Partners in Flight Working Group 1999). These include the Northern shrike, varied thrush, and blackpoll warbler. The golden-crowned sparrow, also a priority species, is found on Fort Richardson.

One species of amphibian, the wood frog, is commonly found in bogs, freshwater and saltwater marshes, and lake margins on post. Wood frogs are important prey species for sandhill cranes (CH2M Hill 1994).

No reptiles occur on Fort Richardson.

Fort Wainwright

Large mammals on Fort Wainwright include black bear, grizzly bear, moose, and caribou. TFTA is particularly important for moose and supports the state's largest population. Caribou have historically used YTA and TFTA, but populations have declined over the years, possibly due to predation and severe winters (USARAK 2004).

Fifteen species of furbearers inhabit TFTA and YTA. These include wolverines, coyotes, lynx, red fox, pine marten, wolves, snowshoe hare, and red squirrel. Other species include muskrat, beaver, and four species of weasel. River otter exist, but they are not common (USARAK 2004).

Known small mammals include five vole species, two lemming species, two species of mice, and four species of shrew. The little brown bat is found in wooded areas and in abandoned buildings. Introduced mammals such as the house mouse, Norway rat, and woodchuck also exist in the cantonment area of Main Post.

Spruce grouse, ruffed grouse, and ptarmigan are common in the region. Grouse hunting is popular at YTA and they are also harvested on Main Post. The variety of nongame birds on lands associated with Fort Wainwright includes at least 58 passerines. Benson (1999) observed 61 species of birds during a 1998 survey at TFTA.

For avian species, no threatened, endangered, or species of special concern were observed, but several Priority Species for Conservation (Boreal Partners in Flight Working Group 1999) were observed. In addition, six species of woodpecker, the rock dove, Rufous hummingbird, and belted kingfisher have been observed on these lands.

At least 25 species of waterfowl and 20 species of raptors use Fort Wainwright (BLM and U.S. Army 1994). Twenty-six species of shorebirds, three gull species, and the Arctic tern have also been observed (USARAK 1999). Four species of loon and two types of grebes have been observed to use waterways on Fort Wainwright and associated lands (USARAK 1999).

The wood frog is the only amphibian species found at Fort Wainwright. No reptiles exist on Fort Wainwright.

Donnelly Training Area

Large mammals on DTA include black bear, grizzly bear, moose, Dall sheep, caribou, and bison. DTA typically has three or four wolf packs, although the structure, distribution, and numbers of packs in a given area are highly variable. Other furbearers on the training area include lynx, beaver, river otter, pine marten, muskrat, mink, coyotes, red fox wolverine and four species of weasel. Anderson et al. (2000) conducted a small mammal survey at DTA. Eleven species of small mammals were found in this study.

Several avian upland game species are found on DTA, including three species of both ptarmigan and grouse. Twenty-eight species of ducks and geese use lands and waterways on the training area. Approximately 300,000 sandhill cranes, a large portion of the world's population, migrate through DTA from late April through mid-May.

Anderson et al. (2000) reported sightings of black-backed woodpecker, gray-cheeked thrush, varied thrush, bohemian waxwing, Townsend's warbler, blackpoll warbler, Smith's longspur, and rusty

blackbird. The dark-eyed junco, savanna sparrow, Wilson's warbler, and orange-crowned warbler were observed most frequently.

A variety of other bird species are found on DTA including three loon, two grebe, three gull, one tern, one dove, one hummingbird, one kingfisher, and six woodpecker.

Wood frogs are the only amphibians on DTA. No reptiles exist on DTA.

3.5.2 Environmental Consequences

Alternative 1: No Action

Under the No Action Alternative, the 1-501st ATF would not convert to an Airborne BCT. This alternative would not result in increased impacts to wildlife.

Alternative 2: Convert 1-501st Airborne Task Force to Airborne BCT (Proposed Action)

Overall, impacts to wildlife species under this alternative would be minor and not significantly different in the type or degree of impact from those considered in the 2004 *Transformation of U.S. Army Alaska Final EIS*.

Construction

Construction of new airborne facilities would create a total footprint of approximately 60 acres on Fort Richardson's cantonment. Not all facilities would require vegetation removal before construction. Vegetation removal, therefore, may be less than 60 acres. Wildlife found in the cantonment area are common to the region, have likely adapted to a human-dominated environment, and would be unaffected by the proposed projects.

Equipment and Training

Increased training requirements under the proposed action could affect some species at Fort Richardson, Fort Wainwright, and DTA. These impacts would be consistent with and would not significantly exceed those described in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004).

MIMs and maneuver space of the Airborne BCT are expected to increase by 200% from the 1-501st ATF. Increases in maneuver and weapons training at Fort Richardson could affect habitat or individuals, groups, or localized populations of wildlife by disrupting normal activity cycles or movements. As is the case with any increase in training levels, some wildlife mortality could occur but this would not likely affect wildlife at the population level. In addition, waterfowl in Eagle River Flats at Fort Richardson could be affected by increased artillery firing.

However, Airborne BCT training does not involve extensive mounted maneuvers. Due to the light footprint of airborne training, impacts to wildlife from maneuvers would only be marginally greater than those considered in the 2004 *Transformation of U.S. Army Alaska Final EIS*.

On Fort Richardson, Airborne BCT training would largely be confined to drop zones and airfields (Figures 3, 4, and 5). Malamute Drop Zone on Fort Richardson is located at the northern end of the installation, in moose calving and winter concentration areas. During these periods, increased disturbance rates from training could affect moose. However, moose appear to be well-adapted to multiple use management (e.g., Andersen et al. 1996), and impacts would be localized and short-term during training events. Species most likely to be affected by increased training levels would be wolverine, grizzly bear, and black bear.

Increased jet noise would also be expected with increased airborne training and may moderately affect certain wildlife or avian populations. Increased disturbance rates due to overflights, weapons training, and mounted or dismounted maneuvers could occur for the wolverine, grizzly bear, black bear, moose, wolf, and raptors. Increased disturbance to the Dall sheep is possible if flights and training occur in mountain valleys. Disturbance to the beluga whale could occur during overseas deployments but impacts would be infrequent, short-term, and minor. Breeding pairs of the common loon could be affected by helicopter flights or training near lakes/nests. The U.S. Air Force (1995) offers results on research for different wildlife species reactions to aircraft overflights.

At DTA grizzly bear, caribou, bison, moose, and wolf may be susceptible to disturbance from training. Increased use of ranges could cause impacts to some priority bird species including boreal owl, white-winged crossbill, Bohemian waxwing, and Hammond's flycatcher. Possible impacts from training could occur to sharp-tailed grouse and great gray owl. Overall impacts to wildlife would not be substantially greater than that described in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004).

Training by the Airborne BCT would occur at Fort Wainwright, but training would be infrequent and not as common as in Fort Richardson or DTA. Impacts to wildlife therefore are expected to remain similar to those described in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004).

Cumulative Impacts

Cumulative impacts to wildlife would result mainly from training activities and vegetation removal projects at Fort Richardson, Fort Wainwright, and DTA. These impacts would not affect any priority wildlife species at the population level.

Wildlife may be temporarily displaced from the immediate area during Stryker BCT training operations (USARAK 2004). Impacts to wildlife are expected to remain similar to those described in the EIS.

Vegetation removal for new facilities at Fort Richardson under the proposed action would have cumulative impacts with similar projects planned for Fort Richardson (Section 3.4). The total vegetation loss would decrease habitat. This impact would be considered minor because the facilities under the proposed action would be located in the urbanized cantonment area.

3.6 NOISE

3.6.1 Affected Environment

The Federal Interagency Committee on Urban Noise (FICUN) has developed guidelines for considering noise in land use planning and control. Using the A-Weighted Day-Night Average Sound Level (ADNL), an average measure of noise events occurring over a 24-hour period with a 10-decibel penalty added to noise events between 10 p.m. and 6 a.m., three noise zones were developed (FICUN 1980). Land uses such as residential areas, schools, and hospitals (noise-sensitive land uses) are not compatible within certain zones unless measures such as double-paned windows have been included in construction to lower interior noise levels. In other zones, noise-sensitive land uses are not at all compatible (FICUN 1980).

USARAK provides a two-week notice to the public for noise generated during late firing training operations (between 10 p.m. and 6 a.m.) through local newspapers and television. Notices are intended as an additional safety measure to keep the public informed regarding areas to avoid during training events.

Noise from transportation sources, such as vehicles and aircraft, and from continuous sources, such as generators, are assessed using the ADNL and are measured in A-weighted decibels (dBA). Impulse noises resulting from armor, artillery, and demolition activities are assessed using the C-Weighted Day-Night

Average Sound Level and are measured in C-weighted decibels (dBC). Impacts of noise on wildlife are addressed in Section 3.5, Wildlife and Fisheries.

In fulfillment of Army regulations (AR 200-1), which implement federal law concerning environmental noise generated by Army activities including aircraft operations, range firing, and weapons testing, USARAK developed an Environmental Noise Management Plan for each installation (in 2001) that assessed the noise environments and associated impacts. Although Army vehicles tend to be louder than typical passenger cars, noise impacts are localized.

Additional information regarding noise on USARAK lands can be found in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004).

Fort Richardson

The existing noise environment at Fort Richardson is documented in its Installation Environmental Noise Management Plan (Montgomery et al. 2001a) and includes noise sources from traffic, aircraft, and small and large caliber weapons. The plan concluded that no significant noise problems were associated with existing operations.

Fort Richardson receives few complaints each year from the surrounding community regarding environmental noise. Most calls are from people with questions or requests for information. The few complaints recently logged are due to noise from rotary wing flights and fixed wing aircraft, typically from other installations, in or approaching Fort Richardson airspace. To lessen noise-related problems, Fort Richardson has adopted newer, quieter equipment and changed timing and location of training activities to reduce noise impact on the public (Montgomery et al. 2001a).

Fort Wainwright

The existing noise environment for Fort Wainwright Main Post, YTA, and TFTA is documented in its Installation Environmental Noise Management Plan (Montgomery et al. 2001b). Noise sources include traffic, aircraft, and large and small caliber weapons. Fort Wainwright receives relatively few noise complaints each year from the surrounding community. Most documented complaints are inquiries about noise sources and when noise is expected to cease. Fort Wainwright staff has found that advanced public notice of training schedules decreases the number of calls to the Public Affairs Office, the department responsible for managing noise complaints.

Donnelly Training Area

The current noise environment at DTA is documented in the Environmental Noise Management Plan that was prepared for Fort Greely (Montgomery and Watson 2001). Routine noise generating operations at DTA involve small arms training, artillery training and rotary wing and fixed wing aircraft. Minor sources of noise include construction, traffic, and recreation. Aircraft activity takes place throughout the airspace above DTA, with the highest concentration of aircraft operations in the immediate vicinity of Allen Army Airfield. Other existing aircraft noise is attributed to Air Force operations over DTA airspace.

DTA receives relatively few environmental noise complaints each year from the surrounding community. Most calls are from people with questions or requests for information. The few recently logged complaints stem from noise of large-scale training activities such as Northern Edge and Cope Thunder.

3.6.2 Environmental Consequences

Alternative 1: No Action

Under the No Action Alternative, the 1-501st ATF would not convert to an Airborne BCT. This alternative would not result in increased noise impacts.

Alternative 2: Convert 1-501st Airborne Task Force to Airborne BCT (Proposed Action)

Overall impact from the activities associated with the proposed action would not be significantly different than those considered in the 2004 *Transformation of U.S. Army Alaska Final EIS*.

Construction

Construction of the Airborne BCT facilities at Fort Richardson would contribute to noise levels, but the effects would be short-term, localized, and would have minor impacts to outlying communities.

Equipment and Training

Increased weapons use at Fort Richardson, Fort Wainwright, and DTA resulting from reorganizing the 1-501st ATF to an Airborne BCT, however the increased noise would not differ significantly from that described in the *Transformation of U.S. Army Alaska Final EIS*. While noise from weapons ranges is expected to increase in frequency, no new weapons systems would be used. Artillery firing points are more than two miles from any residential areas, which would reduce the probability of noise complaints.

The frequency of aircraft noise would increase near drop zones and airfields, but the noise levels would remain similar to current levels. Typical aircraft that may be used for Airborne BCT training could include C-130, C-17, and CH-48D. Noise from C-17 and CH-48D aircraft would be similar to or quieter than noise from the C-130. Due to the increased frequency of aircraft noise, this impact is considered moderate and not significantly different than that considered in the 2004 *Transformation of U.S. Army Alaska Final EIS*.

Both Army and Air Force aircraft would continue to utilize established mitigation measures to prevent noise impacts off of the installation. Table 3.e shows the noise levels from individual aircraft overflights.

Table 3.e Maximum Noise Levels (dBA) of C-130, C-17, and CH-48D Aircraft.

Slant Distance Feet[1]	C-130 Maximum Level dBA	C-17 Maximum Level dBA	CH-48D Level dBA
200	101	101	98
500	94	91	89
1,000	89	83	83
2,000	83	74	77
5,000	73	62	67

[1]Distance from noise source to recording device.
Source: USACHPPM 2002; USARAK 2004; Catherine Stewart, personal communication 2004.

The UAV is designed to not be detected by the human ear when it is in flight and therefore would not contribute to significant noise increases.

The proposed action would result in increased noise levels since military training would increase at Fort Richardson, Fort Wainwright, and DTA. However, the overall impacts of noise levels would be minor to moderate for outlying communities. Certain wildlife or avian populations may be affected. These impacts to wildlife are further described in Section 3.5, Wildlife and Fisheries.

Cumulative Impacts

The greatest cumulative noise impacts would result from construction and training activities other than those described under the proposed action. Additional construction activities at Fort Richardson would contribute to noise, but impacts would be on the cantonment area and are not likely to affect nearby communities or wildlife.

Training would contribute to minor cumulative noise impacts on DTA and Fort Wainwright. Impacts would be cumulative to the Stryker BCT training described in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004). Airborne BCT training would not involve new weapons systems other than those described in the EIS. Noise impacts would exist on roads, training ranges, drop zones, and airfields. This would limit the cumulative noise impacts.

3.7 SOCIOECONOMICS

U.S. Army Alaska continues to play an important role in Alaska's economy. Total payroll for statewide U.S. Army operations at Fort Richardson, Fort Wainwright, and Donnelly Training Area are over $436 million while the non-payroll expenditures account for over $516 million (Department of Defense 2005b). Together, these contribute over $1.9 billion in direct and indirect economic activity for the state of Alaska. Additional information regarding socioeconomics near USARAK installations statewide can be found in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004).

Since the alternatives carried forward for analysis in this EA involve stationing only at Fort Richardson, socioeconomic impacts and analysis are limited to the Anchorage area. Under the proposed action, impacts to Fort Wainwright and Donnelly Training Area would result primarily from training and thus would not be associated with socioeconomic effects. These impacts are addressed in other sections of this EA.

3.7.1 Affected Environment

Anchorage Area and Fort Richardson

At 1,698 square miles, Anchorage is Alaska's largest urban area and home to 42% of the state's population (Alaska Department of Commerce, Community, and Economic Development 2005). Elmendorf Air Force Base and Fort Richardson have played a pivotal role in the Anchorage economy for many years. Total government employment in the Anchorage area is noticeably high at 22%. Anchorage's workforce included 4,502 (military and civilian) Fort Richardson employees, which comprised over 11% of government employment in fiscal year 2004 (Alaska Department of Workforce Development 2005, Department of Defense 2005b). The pay differential between private and public sectors runs opposite to the nationwide pattern, with uniformed military earnings somewhat below the government average. Including employment and income multipliers, economic activity at Fort Richardson contributed a total of approximately $674 million and 13,506 jobs to the local economy in 2004 (Table 3.h).

Regional Economic Activity

Table 3.f shows the per-capita income in Anchorage is substantially above the statewide average. The median income is above the national average, and the poverty level is well below the national average. Per-capita income reflect a downward bias for both Anchorage and Fairbanks because almost all federal and military personnel receive a federal "Cost of Living Allowance" of approximately 25% of gross wages that are excluded from income amounts. Further, military provided housing is not considered income.

Table 3.f Anchorage Regional Income and Poverty Statistics for 2001.

Per Capita Income	$36,406
Median Household Income	$53,887

Median HUD Income	$60,500
Persons in Poverty	18,682
Percent of Population Below Poverty Level	7.40%

Source: Alaska Department of Labor and Workforce Development 2005

Table 3.g lists average monthly employment by standard industrial classification in Anchorage. There are two important items to note. First, uniformed military is not included in the data provided by the Department of Commerce, Community and Economic Development and has been added to the bottom of the table for comparison. The military is excluded from labor statistics because it does not participate in the unemployment compensation program. Uniformed military at Fort Richardson and Elmendorf Air Force Base add about 10,075 employees and comprise almost 25% of the total government workforce. This brings total industry employment up to approximately 153,795, with government contributing over 40,675 of that total, or about 26%. The other item of note is the pay differential between private and public sectors. It runs opposite to the nationwide pattern.

Table 3.g Anchorage Region Average Monthly Employment and Earnings Statistics for Fourth Quarter of 2004.

Industrial Classification	Average Monthly Employment	Average Monthly Earnings ($)
Total		
Total All Industries	143,720	3,572
Private Ownership	113,120	3,468
Total Government (excludes uniformed military)	30,600	3.955
By Industry		
Agriculture, Forestry and Fishing	74	3,149
Mining	2,031	11,1842
Construction	9,098	4,980
Manufacturing	1,703	3,142
Trade, Transportation, and Utilities	33,167	3,314
Information	4,404	4,377
Finance, Insurance and Real Estate	8,211	3,943
Services	100,223	3,167

Federal Government	9,635	4,956
State Government	9,781	3,462
Local Government	11,184	3,525
Uniformed Military	**10,075**	**3,360**

Source: Alaska Department of Labor and Workforce Development 2005; Department of Defense 2005b

Table 3.h provides employment and economic data on Fort Richardson. The data suggest that Fort Richardson has a significant impact on the region's economic activity in terms of employment and total expenditures.

Table 3.h Socioeconomic Impacts of Fort Richardson for Year 2004.

Uniformed Personnel	3,431
Non-uniformed Personnel	1,071
Annual Total Payroll	$196,219,000
Non-personnel Expenditure	$144,095,000
Total Annual Employment Impact Including Multiplier	13,506
Total Annual Dollar Impact Including Multiplier	$673,822,000

Source: Department of Defense 2005b

Housing

Although Anchorage has a higher income, it has a lower proportion of owner-occupied housing than both the state average and the national average for equivalent-sized U.S. cities. This is due, in part, to the transitory nature of its population. The total number of available off-post rental units meeting DOD acceptable quality standards for suitable rental housing in the Fort Richardson housing market area is 15,787 (Niehaus 2005). Although vacancy rates for these units are not available, the study estimates vacancies among all rental units in the study area to be 5.2%. The Niehaus 2005 housing market analysis was based upon a projected expansion of the housing market area further north and south to recognize the affordability of housing areas north of Eagle River and in south Anchorage. In establishing this baseline, the Army recognizes a market trend in which Army families are increasingly willing to commute (beyond the 30 minute guideline normally used by the Army) to access more affordable housing.

In 2005, the Department of Defense achieved its goal of increasing the Basic Allowance for Housing entitlement to a level which eliminated all out of pocket expenses for renters. For the Anchorage rental market, this means that Army families are able to compete effectively for available rental housing. This program and the Army's local Preferred Tenant Program, a pro-active program for helping Army families obtain local rental housing, are key factors leading to the expectation that , by 2010, the proportion of Fort Richardson families renting off post will increase to approximately 62% of the 3,440 total (see Section 3.6.3, Cumulative Impacts). This conforms to the 2005 Army-wide statistic of 66% of Army families residing in the local community.

Public and Social Services
Anchorage has fully developed power, water, communications and transportation infrastructure. Healthcare for Anchorage is provided by numerous providers of public, private, general, and specialized care. Military healthcare facilities include the Elmendorf Air Force Base 3rd Medical Group, U.S. Army medical clinic at Fort Richardson, and the Air National Guard Medical Squadron. Due to reduced funding from the State of Alaska over the past several fiscal years, coupled with increases in the demand for social and family services (including counseling, daycare, parenting classes, and investigation/intervention for abuse and neglect), family services are considered insufficient to meet current needs.

Public Education
The Anchorage School District showed declining enrollments over the past two years and this trend is expected to continue. School districts in Alaska are largely funded by the State of Alaska. The local contribution to the school operating budget, debt service on capital construction, operating budget, per-student cost calculations to the local Anchorage property taxpayer for 2004-2005 are discussed in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004).

Federal Impact Aid offsets the lack of local property taxes on federal properties within school districts. Federal Impact Aid has averaged $4942 per on-post student over the past three years (Mindy Lobaugh 2005). A partial payment is made for qualifying children living off-post. The payment for these off-post students averaged about $102 per student over the past two years. Federal Impact Aid more than offsets the loss of property tax revenue.

Public Safety
The USARAK community has a markedly lower propensity for crime than the state or Anchorage community. Data for years 1999-2002 indicate reported crimes from the Provost Marshall's office at Fort Richardson were below those for the state of Alaska and the city of Anchorage whether viewed from an on-post, off-post, or total perspective. They were also lower whether viewed from complaints regarding a uniformed military or total post personnel perspective. Data from fiscal year 2001-2002 show that mental injury, sexual abuse, physical abuse and neglect were below statewide averages, and far below for sexual abuse and neglect.

USARAK currently deploys troops for training between its properties. This requires use of the Glenn and Richardson highways for convoys from Fort Richardson to Donnelly Training Area. Convoy sizes vary based on the unit deploying for training. Large convoys are usually segmented to reduce impacts to traffic on the public roads. Battalion and brigade-sized training exercises occur approximately four or five times per year, and occur primarily on Tanana Flats Training Area and Donnelly Training Area. Deployment for these exercises may also include rail and air transport.

Recreational Activities
The military's presence in Alaska impacts recreational activities two ways: through competition for harvesting of resources and by restricting access to public lands for training purposes. In a 2002 survey, the proportion of military hunters and anglers in relation to all other users within Alaska was less than 1% (USARAK 2004). At this level the impacts on the rates of harvesting success were considered immaterial.

Military lands in Alaska provide important areas for recreational activities such as hunting, fishing and other means of enjoying the outdoors. They contain many stocked lakes and significant game populations in relatively close proximity to the more highly populated areas in Alaska. These lands include the immediate post lands and adjoining lands under military control for training. At Fort Richardson, moose is the most favored game species and salmon the number one fish species. Other outdoor activities

include hiking, camping, small game hunting, berry picking, woodcutting, and dog sledding. Restrictions due to training activities represent minor economic losses (USARAK 2004).

3.7.2 Environmental Consequences

Alternative 1: No Action

This alternative would be expected to provide a steady-state contribution of economic and social benefits and cost as described earlier in Section 3.6.1. USARAK would continue to be an important economic factor in the railbelt area and the impacts would be beneficial. As noted earlier, military spending makes a notable contribution to the Alaskan economy. In addition, it provides a stabilizing influence which enhances economic development by promoting long-term investments in utilities, communications, and transportation infrastructure.

Alternative 2: Convert 1-501st Airborne Task Force to Airborne BCT (Proposed Action)

The proposed action entails converting the 501st Airborne Task Force currently at Fort Richardson to an Airborne Brigade Combat Team. This alternative entails additional Soldiers, facilities, and equipment as described in the proposed action (Section 2.0, Description of Proposed Action and Alternatives).

Under this alternative, an additional 2,411 uniformed personnel would be added to Fort Richardson, bringing total Airborne BCT uniformed personnel to 3,527. These personnel could bring an additional 1.4 dependents per uniformed military to Fort Richardson. However, recent uniformed military have been young, unmarried personnel. In light of this recent trend, the maximum projected increase of dependents associated with Airborne BCT uniformed personnel would be 3,375. Total population increase in Anchorage would be approximately 5,786. Based on the historical relationship between uniformed and non-uniformed personnel, an additional 1,128 non-uniformed personnel are expected. Since non-uniformed personnel may be employed from the local population, they are not included in population estimates.

Regional Economic Activity

The addition of 2,411 uniformed personnel would increase direct employment at Fort Richardson by approximately 3,540. As discussed in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004), it is expected that the indirect employment multiplier (of two) associated with changes in uniformed personnel would result in a projected employment increase in Anchorage of 10,620.

Based on the historical relationship for uniformed personnel expenditures (in 2005 dollars), direct total payroll expenditures at Fort Richardson would be expected to increase $164 million and non-personnel expenditures would be expected to increase $101 million. These (non-personnel) expenditures translate into approximately 2,020 additional jobs in Anchorage using a conservative estimate of 20 jobs per additional million dollars of spending.

Upon completion of the proposed stationing, the total annual economic activity generated by the proposed action for the Anchorage economy would be approximately $526 million, which includes direct payroll and non-personnel expenditures, and the associated multiplier economic effects that result from these expenditures. In terms of employment, the total projected increase in Anchorage area employment from the direct personnel and non-personnel expenditures would be 12,600 jobs.

Construction activities associated with the proposed action are estimated at $587 million. These expenditures would include facilities for housing, training, maintenance and deployment (Section 2.2.2). The transitory economic effects from these construction related expenditures, including the multiplier, are estimated at $1.2 billion.

Overall impacts to the region's economy would be pronounced and beneficial.

Housing
A comprehensive analysis of the Anchorage housing market and projected impacts of stationing at Fort Richardson is presented in the 2005 Fort Richardson Housing Market Analysis (Niehaus 2005). According to this analysis, total stationing at Fort Richardson (including Airborne BCT personnel) will be 4,645 by the end of 2005. Approximately 1,160 families (accompanied military personnel) will live on post and 1,665 families will live off post by the end of the year. Of the off-post families, approximately 700 will own homes and 965 will rent in the local community. All unaccompanied personnel are typically housed in on-post quarters. Approximately 143 of 1,792 total unaccompanied personnel would live off post with 47 owning homes and 96 renting (Niehaus 2005).

Under the proposed action, since 1,116 members of the Airborne BCT would be from the 501st ATF already stationed at the installation, Fort Richardson would see a stationing increase of approximately 2,411 Soldiers. Approximately 61% of military personnel on Fort Richardson are married. However, recent trends indicate the Airborne BCT might be comprised of a larger percentage of unmarried personnel. Accordingly, USARAK is planning to construct four barracks to house unaccompanied personnel as part of the proposed action. Each of the barracks would be designed to accommodate 360 Soldiers, for a total on-post barracks capacity of 1,440. The barracks would be expected to accommodate all incoming unaccompanied Airborne BCT personnel.

Given the current vacancy rate and the size and availability of current housing in the Fort Richardson market area, it is not expected that stationing under the proposed action will have lasting upward influence on median rental rates or significant downward pressure on vacancy rates.

Public and Social Services
New water and sewer lines would be constructed to increase utility capacity in order to accommodate the new Airborne BCT headquarters and facilities without impacting Fort Richardson's utility infrastructure (see discussion following Table 2.b). All other utilities infrastructure in Anchorage are fully developed and no appreciable impacts on the availability of utility services would be expected.

The proposed action suggests more frequent deployments for extended periods. Impacts are difficult to predict as they depend on the frequency, size, and duration of necessary deployments. However, when impacts occur they are typically reflected in increased pressure and stress on remaining spouses and dependents, which in turn places demands on social services including daycare, counseling, financial assistance, and legal services (Alliance Information and Referral Services 2003).

Public Schools
Based on historical data, there would be about one student for every two uniformed military personnel at Fort Richardson (USARAK 2004). Under the proposed action, this would mean an expected maximum increase of about 1,206 students, or 2.4% increase in current enrollments. In recent years about 90% of military students have attended on-post schools. Even with this projected increase, the projected enrollments would still fall below past enrollment years. As discussed in Section 3.6.1, Federal Impact Aid to local schools from these additional students more than offsets the lost property tax revenue from dependents of Fort Richardson personnel. Overall expected impacts to public schools would be minor.

Public Safety
Section 3.6.1 identified the USARAK community as having a markedly lower propensity for crime than the State or Anchorage community. Thus, reorganization would reduce the relative incidence of crime and may reduce the overall incidence of crime though enhanced economic opportunity. USARAK fire and

emergency services are not expected to increase as a result of increased stationing under the proposed action.

Deployments for training within Alaska are expected to increase slightly in both size and frequency under the proposed action. However, airborne convoys are, by their nature, lighter in impact than other Army units. Vehicle convoys will travel approximately 350 miles each way to Fort Wainwright or Donnelly Training Area and will result in some additional traffic congestion and elevated noise on the Richardson and Glenn highways. Winter and spring convoys are expected to have a greater impact due to hazardous driving conditions or possible roadway degradation. Summer convoys would exacerbate tourist season traffic loads.

Increased congestion has a social impact to both recreation and commercial drivers through the increased opportunity cost of time spent in traffic. This impact is considered minor and can be mitigated through public announcements of scheduled deployments.

Recreational Activities
Airborne BCT stationing is expected to have a minor impact on the relative number of hunters and anglers. Under this alternative, an increase of 325 hunters and 1,209 anglers would be less than .5% of all licenses issued in 2003. These amounts are relatively small in proportion to the non-Army population of hunters and anglers and thus would have an insignificant impact on the success rates of other hunters or anglers (USARAK 2004).

Increased levels of training exercises under the proposed action would decrease recreational access to USARAK training lands. However, any additional closures at the installation would have little effect on Anchorage area game harvests. Between 1992 and 2002, an average of 56 moose have been harvested annually. Due to both low relative increases in personnel and low game harvests, access restrictions would result in minor negative impacts. About six additional training events at Donnelly Training Area would occur under this alternative. This is not expected to appreciably impact recreational access in the Interior.

The overall impact of the various actions associated with the proposed action would be a positive contribution to the Alaska economy, both short and long-term. While positive, other than the short-term pronounced socioeconomic benefits due to construction activities, the proposed action does not represent an economic change that is substantially different than that considered in the *Transformation of U.S. Army Alaska Final EIS* (USARAK 2004).

Table 3.i Socioeconomic Effects of the Proposed Action.

Socioeconomic Factor	Alternative 2: Convert 1-501st Airborne Task Force to Airborne BCT
Uniformed Personnel Increase	2,411
Non-uniformed Personnel Increase	1,128
Public School Student Increase	1,206
Combined Increase of Hunters and Anglers	1,534
Estimated Annual Total Payroll Increase	$164,216,000

Estimated Annual Non-personnel Expenditure Increase	$101,257,000
Construction Projects[2]	$586 million
Total Population Impact (uniformed personnel plus all dependents)	5,786
Total Annual Employment Impact Including Multiplier	12,643
Total Annual Dollar Impact Including Multiplier (not including construction dollars)	$525,636,541

[2]Including multiplier effects, total transitory economic construction benefit for Anchorage would be $1.2 billion.

Cumulative Impacts

Employment impacts from Army transformation and other military expansions would have positive effects on Alaska's south central economy. Military spending will continue to have a stabilizing effect on the region's increasingly diversified economy. Planned or projected construction at Fort Richardson is estimated at about $5 million. Including multiplier effects, this would result in a temporary beneficial impact for the Anchorage economy of approximately $10 million.

Additional stationing actions by USARAK may increase impacts to public and social services and public safety. At this time, two possible stationing actions at Fort Richardson are foreseeable by USARAK. One is a Unit of Execution for command and control of brigade combat teams when deployed. The other entails portions of the Combat Service Support Battalion (CSSB) and Integrated Tactical Signal Battalion (ITSB), the balance of which will be stationed at Fort Wainwright. This may result in an increased stationing of approximately 700 Soldiers at Fort Richardson by 2007. Increased numbers of dependents resulting from stationing actions have a positive impact on the school district through Impact Aid funding. Recreational impacts through increased competition resulting from possible future stationing actions, or additional restrictions to military lands, would be minimal given the overall size and availability of USARAK lands open to the public. The contribution of the proposed action to these socioeconomic impacts is considered minimal due to the small number of additional troops being contemplated.

In 2010, total personnel strength at Fort Richardson is forecast to be 5,650, including 3,444 accompanied (families) and 2,028 unaccompanied personnel. Approximately 823 families are estimated to own a house and the remaining 2,140 families to rent a house locally. Of unaccompanied personnel, 179 are estimated to seek private sector housing with 56 of these being homeowners and 123 renters (Niehaus 2005).

The proportion of personnel living on post is expected to continue to fall due to predictable increases in the Army's Base Allowance for Housing, less restrictive commuting distance, and less restrictive space requirements. The Army's market share of rental housing will increase but the Anchorage community is expected to be able to absorb the additional demand.

Changes due to realignment at Elmendorf AFB (Department of Defense 2005a) are expected to result in a loss of approximately 1,100 military members, although a large portion of these will be on-post Elmendorf AFB residents. This loss will be partially offset by an increase of approximately 170 government civilian personnel as well as the approximate increase of 1,000 military personnel at Fort Richardson (Niehaus 2005).